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| EXAMINER | |
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| SCIACCA, SCOTT M | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/535,172 | SUBRAMANIAN ET AL. | |
| | **Examiner** | **Art Unit** | |
| | Scott M. Sciacca | 2446 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _24 March 2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1,2,11-21 and 24-26_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1,2,11-21 and 24-26_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

**DETAILED ACTION**

This office action is responsive to communications filed on March 24, 2009. Claims 1, 17 and 24 have been amended. Claims 3-10, 22 and 23 have been cancelled. Claims 1, 2, 11-21 and 24-26 are pending in the application.

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 24, 2009 has been entered.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 11, 12, 17-20 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 6,931,018) in view of Gleeson et al. (US 6,763,023).

Regarding Claim 1, Fisher teaches a data switch (Home Router 110 – See Fig. 1a) having a plurality of ingress/egress ports (*"Router 110 comprises interface 140 for communicating with in-home CPE over an in-home network, and interface 144 for communicating with an external network"* – See Col. 5, lines 45-48; Router 110 has interfaces for communicating with CPE's 102, 104 and 106 locally on an in-home network and an interface for communicating on an external network) and for transmitting data packets including a destination address (*"IP data packet 300 comprises … destination IP field 308"* – See Col. 6, lines 24-26), the data switch having address table construction means for generating a table containing associations between ports of the switch and MAC addresses of any devices connected to the switch via those ports, the address table construction means being operable to construct said table in respect of all but a first one of the ports (*"The local network router dynamically generates a routing table from address resolution protocol (ARP) packets exchanged between the CPE and the external network. The table includes, for example, MAC addresses and IP addresses for each CPE on the local network"* – See Col. 3, lines 19-24; *"Table 500 comprises MAC addresses 502 and corresponding IP addresses 504 for each CPE 506 of home-network"* – See Col. 7, lines 5-7; Thus, MAC addresses for the machines on LAN interface 140 are stored in the table, but no MAC addresses are stored which correspond to WAN interface 144).

Fisher does not explicitly teach the data switch being configured to not insert an association between a certain MAC address and said first one of the ports into said table <u>when the data switch identifies that the certain MAC address is associated with</u>

<u>said first one of the ports</u>. Rather, Fisher's data switch appears to be statically configured to never store associations between MAC addresses and the first port (WAN interface 144) in the routing table.

However, Gleeson discloses a switch that is configured to examine the port that a packet was received on and determine if address learning is disabled on that port before storing the address associated with that port in an address table (*"The learning of IP addresses is illustrated in FIG. 8"* – See Col. 6, line 43; *"the learning of the IP address of a packet depends on a check (stage 37) of the port number of the incoming packet against the per port register 11"* – See Col. 6, lines 46-48; *"If IP address learning for that port is not disabled, the IP address is learnt against the respective port (stage 39)"* – See Col. 6, lines 52-54; As step 38 of Fig. 8 shows, if address learning for the particular port has been disabled, then addresses will not be learned).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fisher to examine the port that a received packet is associated with before determining not to insert a MAC address association into a table. Motivation for doing so would be to optimize the switch for routing traffic on a local-area network (See Gleeson, Col. 6, lines 66-67 & Col. 7, lines 1-2 and Col. 6, lines 61-63).

Regarding Claim 2, Fisher in view of Gleeson teaches the data switch according to Claim 1. Gleeson teaches the address table construction means being further operable to construct said table in respect of all of the ports, according to a setting of a

control register (*"It is also feasible to disable learning for a particular port by local (e.g. manual) programming of the switch"* – See Col. 6, lines 37-38).

Regarding Claim 11, Fisher in view of Gleeson teaches a device including a data switch according to Claim 1. Fisher further teaches the plurality of ingress/egress ports comprising a first ingress/egress port (*"Router 110 comprises … interface 144 for communicating with an external network"* – See Col. 5, lines 45-48) and a plurality of other ingress/egress ports (*"Router 110 comprises interface 140 for communicating with in-home CPE over an in-home network"* – See Col. 5, lines 45-47; See also Fig. 1), and wherein the data switch further comprises:

a table store configured to store a table containing associations between the plurality of other ingress/egress ports and MAC addresses of any devices connected to the switch via the plurality of other ingress/egress ports (*"FIG. 5 illustrates an example routing table suitable for use with a preferred embodiment of the present invention. Table 500 comprises MAC addresses 502 and corresponding IP addresses 504 for each CPE 506 of home-network"* – See Col. 7, lines 4-7);

a switching fabric (*"Controller 142 couples interfaces 140 and 144 routing traffic that comprises IP data packets"* – See Col. 5, lines 49-50), and

a control unit operable to control the switching fabric (*"Memory 146 comprises any data storage element for storing routing instructions such as a routing table"* – See Col. 5, lines 51-53), the control unit being arranged, upon receiving a data packet from any of the other ingress/egress ports having a destination address which is not stored in

the table, to control the switching fabric to transmit the data g packet to the first ingress/egress port (*"In step 604, when the destination IP address in the IP data packet does not match an IP addresses stored in the routing table, step 606 is performed. In step 606, the IP data packet is routed to the external network"* – See Col. 7, lines 15-18).

Regarding Claim 12, Fisher in view of Gleeson teaches the device according to Claim 11. Fisher further teaches the first ingress/egress port being adapted to be connected to a communication network (*"Router 110 comprises … interface 144 for communicating with an external network"* – See Col. 5, lines 45-48; *"Home router is coupled to a modem which communicates through an external network 120 to the ISP's"* – See Col. 5, lines 24-25).

Regarding Claim 17, Fisher teaches a method of operating a data switch comprising a first ingress/egress port (WAN interface 144) and a plurality of other ingress/egress ports (LAN interface 140 to CPEs 102, 104, 106), the method including:

generating a table containing associations between at least the plurality of other ingress/egress ports of the switch and MAC addresses of any devices connected to the switch thereby (*"The local network router dynamically generates a routing table from address resolution protocol (ARP) packets exchanged between the CPE and the external network. The table includes, for example, MAC addresses and IP addresses for each CPE on the local network"* – See Col. 3, lines 19-24; *"Table 500 comprises MAC*

*addresses 502 and corresponding IP addresses 504 for each CPE 506 of home-network"* – See Col. 7, lines 5-7; Thus, MAC addresses for the machines on LAN interface 140 are stored in the table, but no MAC addresses are stored which correspond to WAN interface 144), and

discarding a data packet received from the first ingress/egress port that does not have a destination address associated according to the table with any of the other ingress/egress ports (*"In step 604, when the destination IP address in the IP data packet does not match an IP addresses stored in the routing table, step 606 is performed. In step 606, the IP data packet is routed to the external network"* – See Col. 7, lines 15-18; If a packet is received on WAN interface 144 (i.e., from the external network) and the destination address is not found in the table, then the packet would be sent back out to the external network. As a result, the packet would effectively be discarded).

Fisher does not explicitly teach stopping generation of the table before MAC addresses of at least some devices operably coupled through the first ingress/egress port are associated with the first ingress/egress port in the table. Rather, Fisher's data switch appears to be statically configured to never store associations between MAC addresses and the first ingress/egress port (WAN interface 144) in the routing table.

However, Gleeson discloses a switch that is configured to store associations between an address and a first ingress/egress port based on a setting of whether the address learning feature has been disabled (*"It is known, for example, in a `local office interconnect` scheme to modify the operation of a switch, such as switch, 1 by*

*preventing the learning of IP addresses in respect of a selected port"* – See Col. 6, lines 23-26; *"The learning of IP addresses is illustrated in FIG. 8"* – See Col. 6, line 43; *"the learning of the IP address of a packet depends on a check (stage 37) of the port number of the incoming packet against the per port register 11"* – See Col. 6, lines 46-48; *"If IP address learning for that port is not disabled, the IP address is learnt against the respective port (stage 39)"* – See Col. 6, lines 52-54; As step 38 of Fig. 8 shows, if address learning for the particular port has been disabled, then addresses will not be learned).

Based on this teaching from the combination of Fisher and Gleeson, stopping generation of the table before MAC addresses of at least some devices operably coupled through the first ingress/egress port are associated with the first ingress/egress port in the table would occur in the case that the address learning feature is initially enabled, allowing some addresses of devices coupled to the first ingress/egress port to be learned. Afterward, the address learning feature may then be disabled, preventing any further storage of associations between a MAC address and a first ingress/egress port (*"It is also feasible to disable learning for a particular port by local (e.g. manual) programming of the switch. Whether the learning is disabled automatically or not, the ability to learn IP addresses against a port is controlled by the `per port` register 11"* – See Col. 6, lines 37-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fisher to allow stopping generation of the table before MAC addresses of at least some devices operably coupled through the first

ingress/egress port are associated with the first ingress/egress port. Motivation for doing so would be to optimize the switch for routing traffic on a local-area network (See Gleeson, Col. 6, lines 66-67 & Col. 7, lines 1-2 and Col. 6, lines 61-63).

Regarding Claim 18, Fisher in view of Gleeson teaches the method of Claim 17. The combination of Fisher and Gleeson further teaches stopping generation of the table occurring after at least one MAC address of at least one device operably coupled through the first ingress/egress port is associated with the first ingress/egress port in the table (See above remarks regarding Claim 17. In the case that the address learning feature is initially enabled, storing associations between a first ingress/egress port and MAC addresses of some devices coupled to the port may be allowed. Afterward, the address learning feature may then be disabled, preventing any further storage of associations between a MAC address and a first ingress/egress port).

Regarding Claim 19, Fisher in view of Gleeson teaches the method of claim 18. Fisher further teaches:

receiving a data packet having a destination port MAC address absent from the generated table (*"In step 602, IP data packets that are received from CPE on the in-home network are evaluated. The destination IP address in the IP data packet is compared with the IP addresses of the routing table"* – See Col. 7, lines 11-15); and

forwarding the data packet to the first ingress/egress port (*"In step 604, when the destination IP address in the IP data packet does not match an IP addresses stored in*

*the routing table, step 606 is performed. In step 606, the IP data packet is routed to the external network"* – See Col. 15-18).

Regarding Claim 20, Fisher in view of Gleeson teaches the method of Claim 19. Fisher teaches forwarding the data packet further comprising forwarding the data packet only if the data packet was received from one of the plurality of other ingress/egress ports (*"In step 602, IP data packets that are received from CPE on the in-home network are evaluated"* – See Col. 7, lines 11-13; *"In step 604, when the destination IP address in the IP data packet does not match an IP addresses stored in the routing table, step 606 is performed. In step 606, the IP data packet is routed to the external network"* – See Col. 15-18; Data packets received from the CPE (plurality of other ingress/egress) ports are forwarded after they are received).

Regarding Claim 24, Fisher teaches a method of operating a data switch (Home Router 110 – See Fig. 1a) for switching data packets including a destination address (*"IP data packet 300 comprises … destination IP field 308"* – See Col. 6, lines 24-26), the data switch comprising a plurality of ingress/egress ports (*"Router 110 comprises interface 140 for communicating with in-home CPE over an in-home network, and interface 144 for communicating with an external network"* – See Col. 5, lines 45-48; Router 110 has interfaces for communicating with CPE's 102, 104 and 106 locally on an in-home network and an interface for communicating on an external network), the method comprising:

generating a table containing associations between ports of the switch and MAC addresses of any devices connected to the switch via those ports, the generation of the table including constructing said table in respect of all but a first one of the ports (*"The local network router dynamically generates a routing table from address resolution protocol (ARP) packets exchanged between the CPE and the external network. The table includes, for example, MAC addresses and IP addresses for each CPE on the local network"* – See Col. 3, lines 19-24; *"Table 500 comprises MAC addresses 502 and corresponding IP addresses 504 for each CPE 506 of home-network"* – See Col. 7, lines 5-7; Thus, MAC addresses for the machines on LAN interface 140 are stored in the table, but no MAC addresses are stored which correspond to WAN interface 144),

Fisher does not explicitly teach an association between a certain MAC address and said first one of the ports not being inserted into said table <u>when the certain MAC address is identified as being associated with said first one of the ports</u>. Rather, Fisher's data switch appears to be statically configured to never store associations between MAC addresses and the first port (WAN interface 144) in the routing table.

However, Gleeson discloses a switch that is configured to examine the port that a packet was received on and determine if address learning is disabled on that port before storing the address associated with that port in an address table (*"The learning of IP addresses is illustrated in FIG. 8"* – See Col. 6, line 43; *"the learning of the IP address of a packet depends on a check (stage 37) of the port number of the incoming packet against the per port register 11"* – See Col. 6, lines 46-48; *"If IP address learning for that port is not disabled, the IP address is learnt against the respective port (stage*

*39)"* – See Col. 6, lines 52-54; As step 38 of Fig. 8 shows, if address learning for the particular port has been disabled, then addresses will not be learned).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fisher to examine the port that a received packet is associated with before determining not to insert a MAC address association into a table for the same reasons as those given with respect to Claim 1.

Regarding Claim 25, Fisher in view of Gleeson teaches the method of Claim 24. Fisher further teaches the plurality of ingress/egress ports including a plurality of other ingress/egress ports (LAN interface 140 to CPEs 102, 104, 106), and wherein the data switch further comprises a memory storing a table containing associations between the other ingress/egress ports and MAC addresses of any devices connected to the switch via the other ingress/egress ports (*"Memory 146 comprises any data storage element for storing routing instructions such as a routing table"* – See Col. 5, lines 51-53; *"Table 500 comprises MAC addresses 502 and corresponding IP addresses 504 for each CPE 506 of home-network"* – See Col. 7, lines 5-7), the method further comprising:

receiving a data packet from any of the other ingress output ports (*"In step 602, IP data packets that are received from CPE on the in-home network are evaluated"* – See Col. 7, lines 11-13), and

transmitting the data packet to the first ingress/egress port if the data packet contains a destination address that is absent from the table (*"In step 604, when the destination IP address in the IP data packet does not match an IP addresses stored in*

*the routing table, step 606 is performed. In step 606, the IP data packet is routed to the external network"* – See Col. 7, lines 15-18).

Regarding Claim 26, Fisher in view of Gleeson teaches the method of Claim 25. Fisher further teaches:

transmitting the data packet to a corresponding ingress/output port if the data packet contains a destination address that is present on the table (*"In step 604, when the destination IP address in the IP data packet matches an IP addresses stored in the routing table, step 608 is performed"* – See Col. 7, lines 25-27; *"As a result of step 608, a revised data packet is created. In step 610, the revised data packet is placed back on the in-home network or local network for receipt by the appropriate CPE"* – See Col. 7, lines 31-34).

4. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 6,931,018) in view of Gleeson et al. (US 6,763,023) and further in view of Kramer et al. (US 6,658,027).

Regarding Claim 13, Fisher and Gleeson do not explicitly teach at least one of the other ingress/egress ports being arranged to receive and transmit voice signals. Fisher discloses the switch being operable to receive and transmit Ethernet data (*"Network elements such as CPE, home router 110 and modem 114 communicate preferably using standard Ethernet communication interfaces and data formats"* – See

Col. 5, lines 33-35). Kramer teaches modulating voice signals into Ethernet data (Fig. 3 shows a VoIP apparatus which converts a voice signal via CODEC 160 to Ethernet data via Ethernet interface 310). It would have been obvious to one of ordinary skill in the art at the time the invention was made to convert voice signals to Ethernet data for use with the network switch disclosed by Fisher. Motivation for doing so would be to carry voice signals and other data over the same network infrastructure.

Regarding Claim 14, Fisher in view of Gleeson and further in view of Kramer teaches the device according to Claim 13. Kramer further teaches the device comprising a microphone, a speaker, circuitry configured to transform sound signals received from the microphone into data packets and to transform data packets into control signals for the speaker (Fig. 3 shows a microphone, speaker, CODEC 160 and various other circuitry used to convert analog voice signals to digital packet data as well as convert digital packet data to audio signals for playback through a speaker), and wherein the circuitry is coupled to the at least one of the other ingress/egress ports arranged to receive and transmit voice signals (Fig. 3 shows Ethernet interface 310 which may be coupled one of the ingress/egress ports of the Ethernet switch disclosed by Fisher).

Regarding Claim 15, Fisher in view of Gleeson and further in view of Kramer teaches the device according to Claim 14. Fisher further teaches sockets adapted to connect one or more of the other ingress/egress ports to devices which each have a

MAC address (*"Router 110 comprises interface 140 for communicating with in-home CPE over an in-home network"* – See Col. 5, lines 45-47; *"The table includes, for example, MAC addresses and IP addresses for each CPE on the local network"* – See Col. 3, lines 22-24).

Regarding Claim 16, Fisher in view of Gleeson and further in view of Kramer teaches the device according to Claim 14. Fisher further teaches the first ingress/egress port (WAN interface 144) being adapted to be connected to a communications network (*"Router 110 comprises … interface 144 for communicating with an external network"* – See Col. 5, lines 45-48; *"Home router is coupled to a modem which communicates through an external network 120 to the ISP's"* – See Col. 5, lines 24-25).

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 6,931,018) in view of Gleeson et al. (US 6,763,023) and further in view of Kramer et al. (US 6,658,027).

Regarding Claim 21, Fisher and Gleeson do not explicitly teach converting analog audio signals to data packets and providing the data packets to one of the other ingress/egress ports. However, Kramer teaches converting analog audio signals to data packets (*"For VoIP networks, audio signals are digitized into frames and transmitted as packets over an IP network"* – See Col. 1, lines 12-13 Fig. 3 shows a

CODEC 160 for receiving analog audio data from a microphone and encoding the data into digital packet data) and providing the data packets to one of the other ingress/egress ports (Fig. 3 Shows an Ethernet interface 310 for providing the packet data to a network). It would have been obvious to one of ordinary skill in the art at the time the invention was made to convert voice signals to Ethernet data for use with the network switch disclosed by Schnell for the same reasons as those given with regard to Claim 13.

## ***Response to Arguments***

6. Applicant's arguments with respect to Claims 1, 17 and 24 have been considered but are moot in view of the new grounds of rejection.

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott M. Sciacca whose telephone number is (571) 270-1919. The examiner can normally be reached on Monday thru Friday, 7:30 A.M. - 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Pwu can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott M. Sciacca/
Examiner, Art Unit 2446

/Jeffrey Pwu/
Supervisory Patent Examiner, Art Unit 2446